Chapter 3: Attributes of Geographic Objects

Line Features

Line features consist of one or more complete chains that share common attributes such as feature identifiers, address ranges, and census feature class descriptions.

Feature Identifiers

The feature identification fields contain either a general type label or a specific proper name assigned to a complete chain that identifies the feature. Each complete chain that is a part of a named feature, such as US Highway 1, has the same feature identifier.

The TIGER/Line® files use several related data fields to provide a structured description of the feature identifier:
- Feature Direction Prefix (e.g., **N** Adams Ave)
- Feature Name (e.g., **US Highway 1**, **Jefferson** St)
- Feature Type (Roosevelt **Blvd**, Mangosteen **River**)
- Feature Direction Suffix (e.g., Providence St **NE**)

Most named street/highway features have a feature type. Numerous exceptions exist; for example, *Broadway* consists of a feature name with no type specified. Do not confuse feature types that form proper names with the census feature classification scheme. In the Census TIGER® data base, feature names are assigned to line features independently of the census feature class codes (CFCCs) of the line features. For example, major airports usually have an express highway leading to the terminal area. This highway does not have an interstate highway name such as I-95, but may have the CFCC of an interstate highway (A11) because it has the same characteristics as an interstate highway (limited access with separated, multiple lanes).

The feature identifiers of line features that are roads may include either a direction prefix or suffix. Some may have both a direction prefix and suffix.

The feature name fields for line features that are roads may contain both a name and a feature type. For all hydrography and non-road features, the feature type will follow the feature name in the feature name field. In some instances, the feature type is commonly considered part of the name and is combined with the feature name in the TIGER/Line® files to avoid confusion; for example, US Hwy 1. The Census TIGER® System identifies *US Hwy* as a feature type used as a prefix to the name and *1* as the feature name. The feature types, such as US Highway, State Highway, and Interstate that normally precede the name appear in the name field.

Generic feature identifiers have a name listed in the names field, but do not have a feature type or direction. Some examples of generic names include ramp, power line, and reservoir. Generic feature identifiers are selectively added to features that do not have proper names. In most cases, complete chains without proper names have no feature identifier.

The TIGER/Line® files do not support a data level above the complete chain that allows the construction of higher level objects (features). Complete chains with the same name may represent separate features; for example, a county may contain several Main Streets located in different geographic entities (e.g., towns or cities) scattered throughout the county.

The ability to group chains together to include the entire length of a street feature, such as US Route 66, depends on the uniqueness of the identifiers and the consistency of the feature identifiers along the length of the feature. The Census Bureau makes no guarantee that the complete chains have uniform names or contain all of the known feature identifiers. The Census Bureau has taken steps to improve the consistency of feature identifiers and to add feature identifiers to fill in gaps along street features. The Census Bureau also has eliminated some alternate spellings in favor of the spelling confirmed by the ZIP+4® file of the US Postal Service.

The census feature class codes (CFCCs) may vary for chains with the same feature identifier. For example, the most frequent CFCC for a state highway is A21, but the complete chains marking the location of State Highway 32 may have a CFCC of A01, A21, or A31 (see the *Census Feature Class Codes* section in this chapter).

The TIGER/Line® file structure allows up to 4,996 feature identifiers for a complete chain. The primary feature identifier appears in Record Type 1. For street features, the primary feature identifier is usually the name most commonly associated with the address range. Up to five alternate feature identifiers are cross-referenced in each Type 4 record, and a single complete chain can have up to 999 Type 4 records. Alternate feature identifiers include highway designation numbers for named streets, former names, and alternate spellings where source material provided conflicting data.

Where the complete chain represents a limited access highway, the highway type and route designator, such as I-95, should ideally become the primary name, and the local designation, such as Cross County Expressway or Capital Beltway, should become the alternate name. However, this is not always true in the TIGER/Line® files.

The primary and alternate feature identifiers can be independent of each other. There is no assurance that the same combination of primary and alternate feature identifiers will appear together in a sequence of complete chains. There also is no assurance that a feature identifier will consistently appear as the primary identifier; it might be recorded as an alternate feature identifier for some complete chains and a primary feature identifier for others. During TIGER improvement operations, the Census Bureau has taken steps to make the Interstate highway route designator the primary feature identifier for Interstate highways, and the common street name used in mail delivery the primary name on all other roads. The order of identifiers follows this hierarchy: Interstate highway, common name, US highway, county highway, with town and township road at the bottom of the list.

Record Type 5 contains a record for each feature identifier used as either a primary or an alternate name. The TIGER/Line® files link the alternate names in Record Type 5 to Record Type 1 through the use of the alternate feature identification code index that forms Record Type 4. See the *Feature Identifier Record Linkage* section in this chapter.

Feature Identifier Record Locations

Record Type	Field Name	Description
1	FEDIRP	Feature Direction, Prefix
1	FENAME	Feature Name
1	FETYPE	Feature Type
1	FEDIRS	Feature Direction, Suffix
5	FEDIRP	Feature Direction, Prefix
5	FENAME	Feature Name
5	FETYPE	Feature Type
5	FEDIRS	Feature Direction, Suffix

Feature Identifier Codes

- *Direction (Prefix and Suffix)*
  Direction consists of a 2-character abbreviation, left-justified in the data fields, and is used for road features only.

Abbreviation	Explanation
(*blank*)	No Direction
N	North, Norte
S	South, Sur
E	East, Este
W	West, Oeste
NE	Northeast, Norte Este, Nordeste
NW	Northwest, Norte Oeste, Noroeste
SE	Southeast, Sur Este, Sudeste
SW	Southwest, Sur Oeste, Sudoeste
EX	Extended, Extension

- *Feature Names*
  Feature names consist of a 30-character text string with words separated by blanks. Feature names contain upper- and lower-case characters. The feature name is truncated if it is over 30 characters long. For Puerto Rico, the TIGER/Line® file contains the following codes to represent diacritical marks:

  ]   Preceding character has an acute accent (´)
  [Preceding character has a dieresis (¨)
  #   Preceding character has a tilde (~)

The feature name field may contain abbreviations to represent some feature types. See *Appendix D—Standard Abbreviations*.

* *Feature Types*
  The feature type field for road features consists of a 4-character text string. For all hydrography and non-road features, the feature type *will follow* the feature name in the feature name field. The abbreviations in *Appendix D—Standard Abbreviations* may appear in the feature type field or the feature name field.

Data Limitations and Notes In earlier versions of the TIGER/Line® files, users did not find many roads with alternate names in the GBF/DIME-File coverage areas; if an alternate name was provided, it usually represented another local name and not a route number. TIGER improvement operations have since added route identifiers to many of these areas.

Corporate Corridors and Corporate Offset Boundaries A corporate corridor is a narrow, linear part of an incorporated place (or in a few instances, another legal entity). The corporate corridor includes the street and/or right-of-way, or a portion of the street and/or right-of-way within the incorporated place. It excludes from the incorporated place those structures such as houses, apartments, or businesses that front along the street or road.

A corporate limit offset boundary exists where the incorporated place lies on one side of the street and may include all or part of the street or right-of-way, but excludes from the incorporated place, the structures located along that side of the street. See Figure 4-4 in Chapter 4.

To facilitate address coding, the Census TIGER® data base contains duplicate street name and address ranges on complete chains with a CFCC of F11 (nonvisible offset boundary) or F12 (nonvisible corporate corridor). The duplicate street names for the F11 and F12 features are on Record Type 5; the duplicate address ranges are on Record Type 6. Record Type 1 will not contain feature identifiers for complete chains with CFCCs of F11 or F12.

Feature Identifier Record Linkage

Record Type 4 provides the link required to find any alternate feature identifiers belonging to a complete chain. Record Type 4 cross-references each TLID with an Alternate Feature ID code (FEAT) assigned to each record in Record Type 5. Record Type 5 contains all feature identifiers including those that are used only as primary identifiers. However, only the FEATs for complete chains that have alternate feature identifiers appear in Record Type 4. Complete chains that have no alternate feature identifier will have no Type 4 record.

To find the alternate feature identifiers for a complete chain, begin by determining the TLID for the complete chain. Then search for this TLID in Record Type 4. If the complete chain has any alternate feature identifiers, Record Type 4 should provide at least one record.

Once found, the Record Type 4 entries will each contain from one to five FEAT numbers. The FEAT fields are blank when no further alternative identifiers exist. The first FEAT field (FEAT1) should always have a valid FEAT number. Finally, find the records in the Record Type 5 file that match the FEAT codes from Record Type 4. The TIGER/Line® file provides a record sequence number to identify multiple Type 4 records that might exist for one TLID.

Even though Record Type 5 contains all feature identifiers, Record Type 4 contains only references for alternate feature identifiers. Data users cannot link all of the names in Record Type 5 to all of the associated complete chains in Record Type 1 by using Record Type 4.

Feature Identification Numbers Record Locations

Record Type	Field Name	Description
1	TLID	TIGER/Line® ID, Permanent Record Number
4	TLID	TIGER/Line® ID, Permanent Record Number
4	RTSQ	Record Sequence Number
4	FEAT1	Line Additional Name Identification Number, First
4	FEAT2	Line Additional Name Identification Number, Second
4	FEAT3	Line Additional Name Identification Number, Third

Feature Identification Numbers Record Locations *(cont.)*

Record Type	Field Name	Description
4	FEAT4	Line Additional Name Identification Number, Fourth
4	FEAT5	Line Additional Name Identification Number, Fifth
5	FEAT	Line Name Identification Number
9	FEAT	Line Name Identification Number

Feature Identification Code The FEAT and sequenced FEAT data fields contain an 8-digit integer number (without leading zeros). A FEAT is assigned sequentially, beginning with 1, to each feature identifier in Record Type 5. The FEAT *is not* a permanent identification number.

TLID is the record identifier for the complete chain. See Chapter 2 for a full discussion of TLIDs.

RTSQ is a 3-digit integer that uniquely identifies multiple Type 4 records with the same TLID. RTSQ equals 1 for the first occurrence of a TLID in Record Type 4 and can reach a maximum of 999 for subsequent occurrences.

Address Ranges and ZIP Codes®

The TIGER/Line® files contain address ranges, not individual addresses. The term *address range* refers to the first possible structure number and the last possible structure number along a complete chain side relative to the direction in which the complete chain is coded. The address ranges in the TIGER/Line® files are predominantly potential ranges that include the full range of possible structure numbers even though the actual structures might not exist.

The address numbers used to create the address ranges are commonly known as city-style addresses. A city-style address minimally consists of a structure number, street name, and a 5-digit ZIP Code®; for example, 213 Main St 90210. In the TIGER/Line® files, the ZIP Codes® usually appear only on those complete chains that have address ranges identified. However, they may appear on some road features without the address ranges.

An address range also may have the full 9-digit ZIP Code® that includes the USPS's 4-digit ZIP+4® Add-On code. The Census Bureau has added the Postal Add-On code to the Census TIGER® data base using an automated match to the USPS's AMS II ZIP+4® file. The codes in the TIGER/Line® files are the street-level codes the USPS has assigned to address ranges. The USPS may assign more specific codes to companies and buildings, and to apartments, floors, or suites within buildings. Some address coding software that uses the AMS II ZIP+4® file may provide the more specific codes. However, the TIGER/Line® files contain only the more general codes.

Usually the ZIP+4® Add-On code is not required to uniquely identify an address range. There are a few situations where a street name and address range legitimately appear more than once in the same 5-digit ZIP Code®. Usually the USPS distinguishes these duplicates by using different postal station names. However, the Postal Add-On code will uniquely identify these cases. Puerto Rico is a special case because many addresses were uniquely assigned within an *urbanizacion* (a community or development) and could duplicate another address in a different urbanizacion with the same 5-digit ZIP Code®. To resolve this problem, the USPS added an additional line to the address to identify the urbanizacion. The 9-digit ZIP Code® also may serve to uniquely identify these address ranges. We do not yet have all of these 9-digit ZIP Codes® in the Census TIGER® data base.

Address Ranges

Complete chains in the TIGER/Line® files have one end point labeled as the *start node* and the other end point labeled as the *end node*. The start and end nodes also are referred to as *from* and *to*. The start node always corresponds to the beginning of the complete chain identified by the start node coordinates FRLAT and FRLONG. The order of the addresses follows the sequence of the nodes on the complete chain; the nodes may not be related to the low to high orientation of the address range. The *start address* may be higher or lower than the *end address* for a complete chain. Structure numbers usually, but not always, systematically increase or decrease while moving along a street in a set direction from one complete chain to the next (see Figure 3-1).

Figure 3-1 **TIGER/Line® Address Range Basics**

The TIGER/Line® files contain potential address ranges for city-style addresses. The complete chain (between the start node and the end node) in the diagram below has two address ranges; the left side has odd-numbered addresses and the right side has the complementary even-numbered addresses. Potential address ranges along a complete chain have values that encompass the addresses of existing structures, as well as those not yet built.
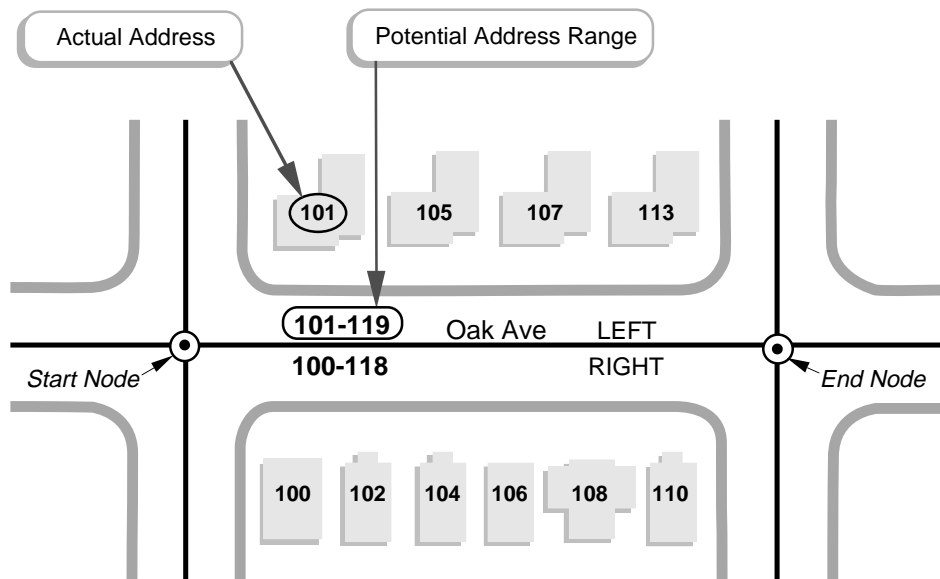
Record Type 1 contains separate data fields for both the start and end of each address range.

				Left side		Right Side	
				Start	*End*	*Start*	*End*
RT	TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR
1	0007654320	Oak	Ave	**101**	**119**	**100**	**118**

Record Type 1   **Address Range**

Record Type 1 contains the initial address ranges for the left and the right sides of a complete chain. A complete chain side may have multiple address ranges. Often this occurs when address ranges are split to accommodate different 9-digit ZIP Codes®. The TIGER/Line® files use Record Type 6 to store any additional ranges as required. The Type 1 record will hold the ranges with the largest sequence of numbers. However, Record Type 6 may hold a significant number of additional ranges. Data users must use Record Type 6 to obtain the entire picture of the possible address ranges along a complete chain.

In Record Types 1 and 6, both the left- and the right-side address ranges have a start and an end address range field that can contain a maximum of 11-alphanumeric characters. The address range fields are right-justified. Each address range in the TIGER/Line® files has only one parity. Only odd-numbered addresses are contained within an address range with odd start and end structure numbers. Likewise, only even-numbered addresses belong to an address range with even start and end structure numbers. The value zero is not used as a valid address range end value. Generally, the left and the right sides of a complete chain have opposite parities. If both odd and even addresses exist on the same side of a complete chain, the TIGER/Line® files provide both an even and an odd parity range for that side of the complete chain. One of the ranges appears in Record Type 1, while the other range appears separately in Record Type 6.

Some address ranges may include single value ranges, such as 16-16, referred to as *include addresses*. These include addresses are anomalies; they may have a parity different than the prevailing address range on the complete chain side, or appear as an outlier from an adjoining range that does not fit within the range belonging to the complete chain where it is located. For example, the location of 16 Osage St falls on the predominantly odd-numbered left side of the complete chain with the address range 1-99. The range 16-16 will appear as an additional include range on the left side of the street. The even address range 2-98 on the right side of the street must exclude the number 16 structure number; the right address range becomes two ranges, 2-14 and 18-98. Outliers follow the same pattern. For example, 10 Persimmon St may appear on the side of the complete chain with the range 100-198 and not on the complete chain with the

range 2-98. As before, 10-10 would become an additional range added to the complete chain with the range 100-198, and the address range 2-98 would become two ranges, 2-8 and 12-98. Because *include address* ranges require complex edits that may involve several complete chains, the Census Bureau cannot guarantee that all address duplication has been identified and eliminated.

Some basic characteristics of address ranges are as follows:

- The TIGER/Line® files generally contain only those city-style address ranges used for mail delivery. They do not show rural route and post office box addresses. In the future, they may contain structure numbers assigned in select areas for use by local emergency services, but not for mail delivery. The TIGER/Line® files do include address ranges and ZIP Codes® in some small places where the USPS provides only post office box service, not street delivery. These address ranges represent the structure numbers collected during the 1990 census field operations, while the ZIP Codes® represent the post office boxes. The address ranges in these areas do not have Postal Add-On codes since the USPS does not use them for street delivery.

- Gaps may exist between multiple ranges for a single complete chain. A gap may be significant, since any numbers missing from one complete chain may actually appear on another complete chain in the case of address anomalies such as *out-of-parity* or *out-of-sequence* addresses (see Figure 3-2).

- In a few rare cases, address ranges can include numbers with alphabetic characters. These characters help uniquely identify addresses within a county. For instance, certain unincorporated areas of Genesee County, Michigan add a letter G prefix to the address number. The characters are consistently placed within the address range field; for example, the letter G maintains a consistent column placement in the range G1 to G99 (see Figure 3-3).

- Address ranges exist only for street features, and in some cases, corporate corridor and corporate offset boundary features.

Figure 3-2 **TIGER/Line® Multiple and Out-of-Sequence Address Ranges**

The TIGER/Line® files can accommodate complex address situations by using more than one address range. A complete chain may contain both odd and even ranges, provided the ranges are not duplicated elsewhere. Whenever there is more than one address range per side for a complete chain, the additional address ranges go into Record Type 6. The TLID field links the two record types. Record Type 6 has a sequence field (RTSQ) that allows more than one Record Type 6 to have the same TLID. The largest address ranges are put on Record Type 1 and the smaller ranges on Record Type 6. The complete chain in the diagram below has two address ranges on each side. This situation results when a structure with an even-numbered address (150-150) is built on the odd-numbered side of the street.
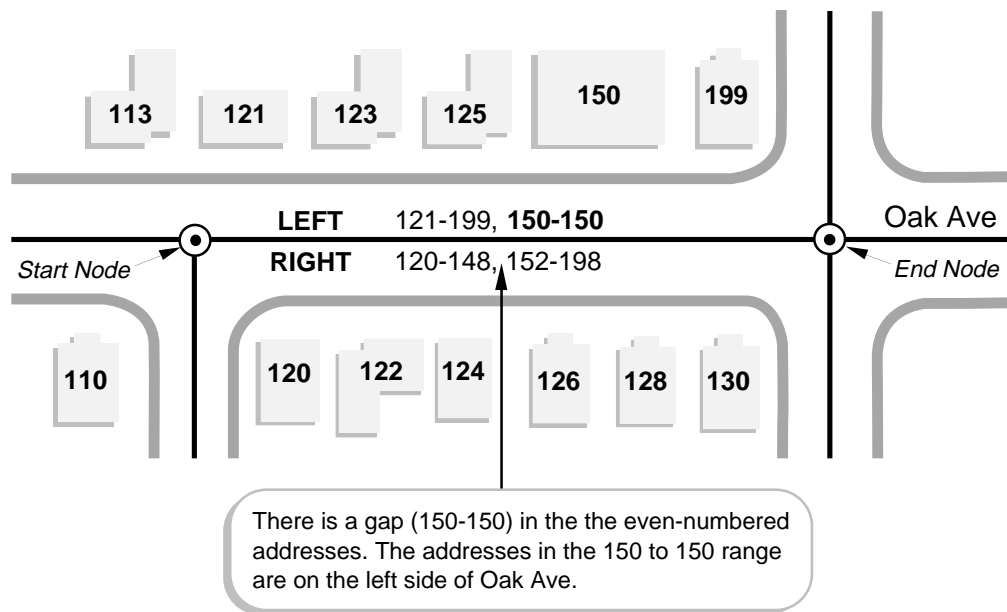
Record Type 1   **Address Range**

				Left side		Right Side	
				Start	End	Start	End
RT	TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR
1	0007654321	Oak	Ave	121	199	120	148

Record Type 6   **Address Range**

			Left side		Right Side	
			Start	End	Start	End
RT	TLID	RTSQ	FRADDL	TOADDL	FRADDR	TOADDR
1	0007654321	1	150	150	152	198

Figure 3-3 *Address Range Special Cases*

Even though some of the addresses have alphabetic suffixes, the basic number is still contained within the range 201 to 249. Only a few rare situations require alphabetic characters to uniquely identify an address range.

Some structures may have a street number that is inconsistent with those of adjacent buildings.

| 125 | 151 | 199 |

| 201 | 201B | 129 | 227 | 229 | 235 |

121-127, 131-199   Elm Ave   201-249, **129-129**   RIGHT

120-198   *End Node*   200-250   LEFT   *Start Node*

| 124 | 126 | 128 | 130 |

| 200 | 202 | 204 | 220 | 228 226 | 232 | 240 |

The address range 129-129 creates the gap between 121-127 and 131-199 on the adjacent complete chain. Inconsistent street numbers may affect the address ranges of other complete chains.

The start-end orientation of address ranges follows the start-end node orientation of the complete chain. Address ranges run from high to low or low to high to be consistent with the actual orientation of address ranges along the street. Single number street addresses appear as a range.

Record Type 1   Address Range

				Left side		Right Side	
				Start	End	Start	End
RT	TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR
1	0007654322	Elm	Ave	250	200	249	201

Record Type 6   Address Range

			Left side		Right Side	
			Start	End	Start	End
RT	TLID	RTSQ	FRADDL	TOADDL	FRADDR	TOADDR
1	0007654322	1			**129**	**129**

- Address ranges (consisting of a unique combination of structure number, ZIP Code®, feature name, feature type, and directional) should not overlap; addresses should belong to only one range. The Census Bureau edits the address ranges to locate possible overlaps, but cannot guarantee that all possible overlap situations have been identified.

- Address ranges in the TIGER/Line® files are usually associated with both the primary and alternate feature identifiers. *Caution:* Address range overlaps may occur if primary address ranges are linked to alternate feature identifiers that identify route numbers.

Some address systems use a hyphen to separate avenue numbers, private road designators, and grid cell numbers from the structure numbers; for example, *10-01 Reynolds St* uses a hyphen to separate the avenue number from the structure number.

Imputed Address Ranges

Imputed address ranges occur during the process of updating the Census TIGER® data base when a new complete chain intersects an existing complete chain with address ranges. The intersection splits the existing complete chain and produces two new complete chains connected by a new node located at the intersection point. The update program divides the old address ranges among the two new complete chains and *imputes* the address range ends at the new node.

The impute process allocates either all or part of each original address range to each of the new complete chains in proportion to their lengths (see Figures 3-4 and 3-5). For each side of the original complete chain, the process considers all address ranges appearing on each side and determines the overall low and high address. The process assumes the addresses are evenly distributed over the length of the complete chain, and applies the proportion of complete chain lengths to the overall address ranges to calculate a split point address for each side. Address ranges that fall entirely above or below the split point address are moved intact to one of the new complete chains. The process divides any address ranges that contain the split point address and allocates each part to one of the new complete chains. The new address range ends created from the split are imputed values and have an impute flag.

Some intermediate address range ends also may carry the impute flag. These address range ends fall between the overall high and low address for complete chain sides that have more than one address range. The impute flags on these range ends often mark splits created by adding different nine-digit ZIP Codes® to parts of the original address range. These impute flags are not significant and should be disregarded.

The impute flags identify address ranges that have been through the impute process. Each record in the TIGER/Line® files contains four separate 1-character impute flag fields, one for each address range end.
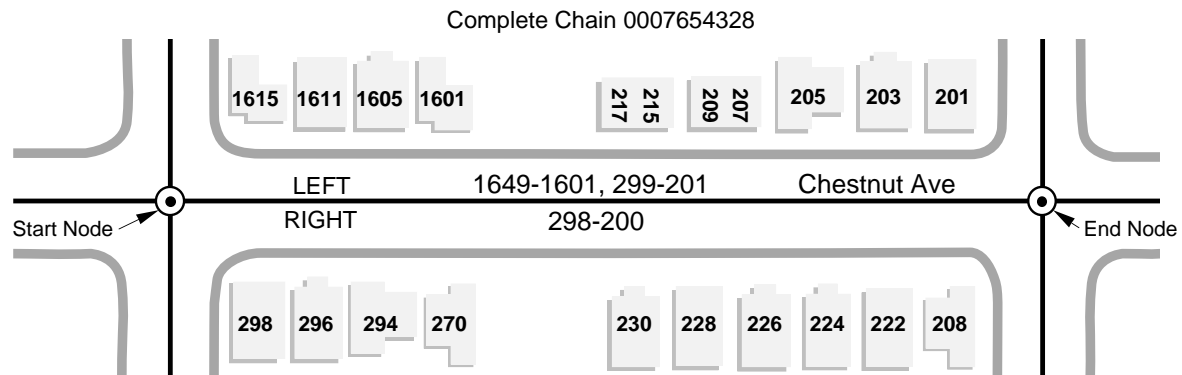
ZIP Codes®

The ZIP Code® is an attribute of the address ranges. The TIGER/Line® files have a five-character ZIP Code® field containing a numeric code with leading zeros. Both the left- and right-side address ranges share the ZIP Code® that appears in the same Type 1 or Type 6 record. Each address range belonging to a complete chain can have a different ZIP Code®.

Where ZIP Code® boundaries follow a street, the complete chain may have different left- and right-side ZIP Codes®, or different ZIP Codes® along its length. Because the Census TIGER® data base identifies only one ZIP Code® for each address range record, address ranges with different ZIP Codes® must appear in separate records. The address range(s) with one ZIP Code® will appear in Record Type 1, and the address range(s) with the other ZIP Code(s)® will appear in Record Type 6. For example, one complete chain making up Duke Street is a ZIP Code® boundary; the left-side range 1-99 has a ZIP Code® of 12345, and the right-side range 2-98 has a ZIP Code® of 54321. The range 1-99 with a ZIP Code® of 12345 will appear in Record Type 1, and the right-side range fields will be blank. The range 2-98 with a ZIP Code® of 54321 will appear in Record Type 6, and the left-side range fields will be blank.

If the complete chain had additional address ranges with a ZIP Code® of either 12345 or 54321, these additional address ranges would appear with one of the existing ranges or as additional Type 6 records. For example, a right-side range of 150-198 with a ZIP Code® of 12345 could appear on the

Figure 3-4 **TIGER/Line® Address Range Imputes—Before Split**

The Census TIGER® data base uses impute flags to indicate that the one or both ends of an address range are based on calculations rather than known values. Imputed address situations generally occur when a complete chain with existing address ranges becomes split by a new complete chain. The illustration below shows the address ranges on Chestnut Ave before a split. All impute flags for this complete chain are set at zero. Figure 3-5 shows the address ranges after the split.
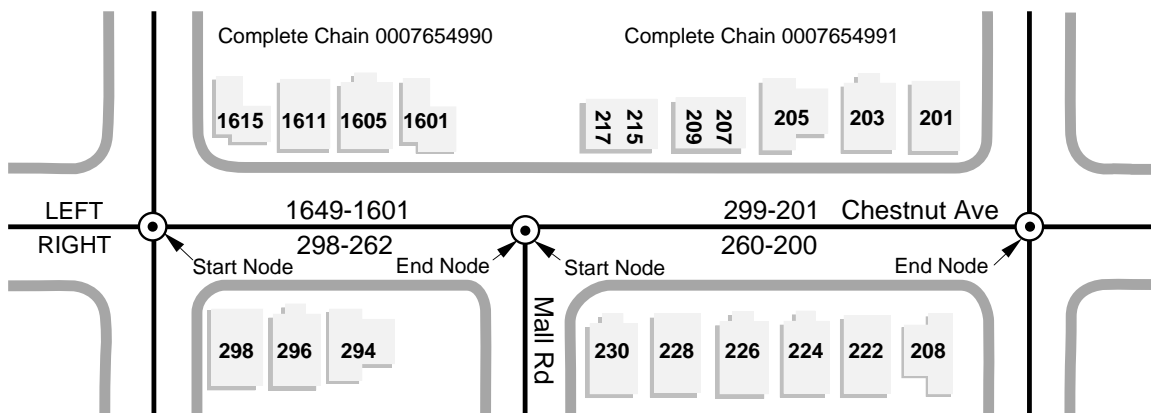

Record Type 1				Address Range				Impute Flags			
				Left side		Right side		Left side		Right side	
				Start	End	Start	End	Start	End	Start	End
RT	TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR	FRIADDL	TOIADDL	FRIADDR	TOIADDR
1	0007654328	Chestnut	Ave	299	201	298	200	**0**	**0**	**0**	**0**

Record Type 6			Address Range				Impute Flags			
			Left side		Right side		Left side		Right side	
			Start	End	Start	End	Start	End	Start	End
RT	TLID	RTSQ	FRADDL	TOADDL	FRADDR	TOADDR	FRIADDL	TOIADDL	FRIADDR	TOIADDR
6	0007654328	1	1649	1601			**0**	**0**		

Figure 3-5 **TIGER/Line® Address Range Imputes—After Split**

In the diagram below, Mall Rd has split the complete chain into two parts. Each part is assigned a new TIGER/Line® identification number (TLID) and the old number is deleted. The overall address range for each complete chain side (1649 to 201 on the left side and 298 to 200 on the right side) and the split points for each of these address ranges (approximately 1088 on the left side and 261 on the right side) are determined by the TIGER System. Address ranges that fall entirely above or below the split point belong to one of the two new complete chains and do not get an impute flag. The TIGER System divides those address ranges that contain the split point and assigns a part to each of the new complete chains.

Record Type 1			Address Range				Impute Flags			
Complete Chain 0007654990			Left side		Right side		Left side		Right side	
			Start	End	Start	End	Start	End	Start	End
RT TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR	FRIADDL	TOIADDL	FRIADDR	TOIADDR
1 0007654990	Chestnut	Ave	1649	1601	298	**262**	0	0	0	**1**

Record Type 1			Address Range				Impute Flags			
Complete Chain 0007654991			Left side		Right side		Left side		Right side	
			Start	End	Start	End	Start	End	Start	End
RT TLID	FENAME	FETYPE	FRADDL	TOADDL	FRADDR	TOADDR	FRIADDL	TOIADDL	FRIADDR	TOIADDR
1 0007654991	Chestnut	Ave	299	201	**260**	200	0	0	**1**	0

Type 1 record with the left-side range of 1-99. However, a right-side range of 150-198 with a ZIP Code® of 54321 could not appear on the Type 6 record with the range 2-98. Instead, the range would have to appear in a second Type 6 record. Since the ZIP Codes® in the TIGER/Line® file relate to mail delivery along addressed streets, they are not true area features. It is possible that a polygon may contain addresses associated with more than one delivery ZIP Code®.

Postal Add-On Code

The 1995 TIGER/Line® files have a 4-character Postal ZIP+4® Add-On code which is located on Record Type Z. Record Type Z may link to a left- or right-side address range in Record Type 1 or in Record Type 6. The first two characters of the code indicate the USPS sector code; the last two characters represent the USPS segment code.

As stated earlier, the Census Bureau used an automated match process to assign the Add-On codes to the address ranges in the Census TIGER® data base. The match utilized only the street type records from the AMS II ZIP+4® file. These records identify a single Add-On code for a range of addresses. The ZIP+4® file also contains company and high-rise building records that supply specific codes to companies, buildings, and floors or suites within buildings. The Census Bureau did not match these codes to the Census TIGER® data base because it was not practical to add all of the building features to the Census TIGER® data base. Also, it was not feasible to split the address ranges for individual building-level codes.

The match process attempted to relate the 5-digit ZIP Code®, street name identifier, and address ranges for each feature in the Census TIGER® data base to the corresponding street type record in the AMS II ZIP+4® file of the USPS. A match was not always possible because the process could not identify a single match between features with a high degree of confidence.

Where successful, the process added the Postal Add-On codes to the address ranges in the Census TIGER® data base. The process split these ranges if the Add-On codes covered only part of the range. Splits of this type occurred because the potential address ranges used by the Census

Bureau differed from those used by the USPS. The USPS assigned different Add-On codes for each range of addresses along a block side. For example the 100, 200, and 300 numbered addresses received different Add-On codes even though they appeared on the same block side. The Add-On codes also may appear on more than one complete chain. This results because of differences in potential address ranges, and because the Census Bureau recognizes complete chain breaks and intersections not recognized by the USPS.

Address Information and Key Geographic Locations (KGLs)

KGLs represent a special class of address information. They provide a geocoding tool like address ranges, but also identify a spatial object similar to a landmark. The Census Bureau uses KGLs to identify named buildings where the use of the feature name enhances the ability to geocode addresses. These cases include airports, shopping centers, schools, condominiums, hotels, and apartment complexes. The Census Bureau uses KGLs in situations where the address range along a street does not geocode to the correct block. Thus, greater accuracy in geocoding is provided when the KGL address is used than when the address range on the complete chain is used.

In the 1995 TIGER/Line® files, each KGL usually has a street address, CFCC, KGL feature name, and ZIP Code®. The street feature identifier associated with the address of the KGL is obtained by linking the FEAT field to Record Type 5 which contains the list of all street name identifiers. The KGLs are independent of the address range on the complete chain; the geocoding link for the KGL is the GT-polygon. In most cases, one of the complete chains that forms the boundary of the GT-polygon will contain the KGL address. However, this relationship is not true for all KGLs. In order to locate the street segment with the KGL address, use the previously linked street name identifier from Record Type 5. The ZIP Codes® may not be the same.

Even though the KGLs appear to identify specific structures, the KGL descriptions do not include location coordinates. In most cases, the Census Bureau can determine the general location of the KGL, but cannot provide a specific location with any certainty.

Address Information Methodology

Pre-1992 Address Ranges

Before the 1990 census, the Census TIGER® data base contained address ranges only for the area covered by 1980 geographic base files (GBF/DIME Files) and a few file extension areas prepared in conjunction with 1980 census activities. These ranges were used to geocode a list of addresses to geographic areas for use in the 1990 questionnaire mail-out.

For the 1990 census, the Bureau purchased the list of addresses from commercial vendors for the geographic areas where the Census TIGER® data base included address ranges. To verify the accuracy of the addresses, the Census Bureau began with an initial assignment of residential addresses to the 1990 census tracts and blocks. Clerical review of the results of the assignment process provided additional address range updates.

If an address range in the TIGER/Line® file prepared for the 1990 census was incorrect, the Census Bureau implemented procedures to ensure that the error did not adversely affect the accuracy or the quality of the 1990 census. Later, in field operations, enumerators verified, corrected, and updated the list of addresses assigned to each block. They walked the perimeter and all interior streets of each block and checked the address list against their observations.

1992 TIGER/Line® Expanded Addresses

In the 1992 TIGER/Line® Files, the Census Bureau expanded the address range coverage for the entire United States by creating new ranges based on the Address Control File (ACF) used in the 1990 decennial census. The ACF was a master list of addresses geocoded to the census block level. For each block, the individual structure addresses were grouped by feature identifier and sorted into numerical order to extract an actual range. The order of the addresses along the complete chains bordering the block, relative to the start and end nodes of the complete chains, came from the order of addresses for the street feature as a whole (i.e., the collection of linked complete chains with the same feature identifier). Likewise, the overall parity of the street feature set the standard for identifying and editing anomalies along the complete chains.

To maintain confidentiality of individual addresses, the Census Bureau converted the actual range to a potential range. This was accomplished by expanding the actual range to complete a hundred range, splitting the difference between coverage gaps, and in some cases disguising the range by the random addition or subtraction of addresses.

Where a complete chain in the Census TIGER® data base contained both an ACF-derived address range and a pre-existing address range, only the pre-existing address range was extracted for the 1992 TIGER/Line® files. This extraction process was followed on each side of a complete chain. No attempt was made to resolve differences between the two sources (the pre-existing or the ACF-derived). The ACF-derived address range may have created overlaps with pre-existing address ranges on the adjoining complete chains.

Post-1992 Expanded Addresses

What had been true for addresses in the 1992 TIGER/Line® files was modified for the 1994 and 1995 versions of the files. The pre-existing address ranges in the Census TIGER® data base and the ACF address ranges were matched to determine their comparability. Then a rematch process was performed similar to the process used for the 1992 TIGER/Line® files. Using more sophisticated processing, the address ranges were merged to create better address range coverage. In the merge process, the ACF range became the base address range, and the pre-existing address range in the Census TIGER® data base was used to make the address range coverage more complete. The merged range is the address range in the 1995 TIGER/Line® files.

In addition to the address merge process, the Census Bureau ran an address range edit. The edits fixed some orientation and parity reversals along a street feature. They also identified overlapping address ranges of different complete chains that had the same street identifier and ZIP Code®. Where all of the overlapping addresses were geocoded to the same 1990 census block, only one instance of the address was retained in the TIGER/Line® files. If overlapping addresses were geocoded to a different census block, none of these overlapping addresses were

entered into the TIGER/Line® files. For this reason, street features that had address ranges in the past may show no ranges or incomplete ranges in the latest versions of the TIGER/Line® files.

Both primary and alternate feature identifiers can be used in geocoding, but great care should be used with the alternate identifiers. In the case of corporate corridors and corporate limit offset boundaries, the alternate address linked to the boundary should be used for geocoding rather than the primary range linked to the street (see the *Corporate Corridors and Corporate Limit Offset Boundaries* section in this chapter).

Orientation edits attempted to standardize the low to high orientation of address ranges along a chain of street feature complete chains with the same feature identifier. Complete chains with address ranges that were specifically identified as orientation anomalies were automatically excluded. The edit determined the majority orientation for the street feature chain and reversed the low and high values on any range that deviated from the majority. The edit only created street feature chains that included adjacent complete chains; discontiguous street feature chains were edited as separate pieces. Therefore, the from-to orientation of the complete chains may be inconsistent along a feature chain.

The parity edits attempted to place the even- and odd-parity ranges consistently on the same side of a feature chain. Chains with address ranges that were specifically identified as known anomalies were automatically excluded. Because address geocoding could be affected, the parity fix required a feature chain with a minimum of four complete chains and a majority parity representing 70 percent of the address ranges. As a result, smaller feature chains remained unaltered.

For the 1994 TIGER/Line® files, the Census Bureau conducted a general ZIP Code® clean-up and staff added new ZIP Codes® created since the 1990 census. These updates had a significant impact on parts of Michigan, California, and central Florida. Nationwide, automated processes eliminated illegal codes not recognized by the USPS as ZIP Codes®, and clerical operations began eliminating the scatter of incorrectly applied ZIP Codes®. Nearly all 3-digit ZIP Code® anomalies have been corrected.

Address Range Record Locations

Record Type	Field Name	Description
1	FRADDL	Start Address, Left
1	TOADDL	End Address, Left
1	FRADDR	Start Address, Right
1	TOADDR	End Address, Right
6	FRADDL	Start Address, Left
6	TOADDL	End Address, Left
6	FRADDR	Start Address, Right
6	TOADDR	End Address, Right
9	KGLADD	Key Geographic Location Address

Impute Flag Record Locations

Record Type	Field Name	Description
1	FRIADDL	Start Imputed Address Flag, Left
1	TOIADDL	End Imputed Address Flag, Left
1	FRIADDR	Start Imputed Address Flag, Right
1	TOIADDR	End Imputed Address Flag, Right
6	FRIADDL	Start Imputed Address Flag, Left
6	TOIADDL	End Imputed Address Flag, Left
6	FRIADDR	Start Imputed Address Flag, Right
6	TOIADDR	End Imputed Address Flag, Right

ZIP Code® Record Locations

Record Type	Field Name	Description
1	ZIPL	ZIP Code®, Left
1	ZIPR	ZIP Code®, Right
6	ZIPL	ZIP Code®, Left
6	ZIPR	ZIP Code®, Right
Z	ZIP4L	+4 Postal Add-On Code, Left
Z	ZIP4R	+4 Postal Add-On Code, Right
9	KGLZIP	Key Geographic Location ZIP Code®
9	KGLZIP4	+4 Postal Add-On Code for KGL

Address Ranges and Impute Flag Codes

Address Ranges

- Numeric characters or a mixture of numeric and alphabetic characters (maximum of 11 characters)
- Ranges beginning or ending with zero (0) are not valid

• Address range fields are blank when no address range is available. Both the *start* and *end* address range fields are blank, or both have non-zero values.

Impute Flags *(1-character numeric code)*

• *blank*— No address range available
• 0— Not imputed
• 1— Imputed

ZIP Codes®

See the US Postal Service (USPS) Publication 65, *National Five-Digit ZIP Code® and Post Office Directory* for a list of valid 5-digit ZIP Codes®. The 1995 TIGER/Line® files may not contain all delivery ZIP Codes® and contain few non-delivery ZIP Codes®. The distribution of ZIP Codes® in the TIGER/Line® files may not reflect the exact USPS ZIP Code® service area.

Limitations

Users of the address ranges in the TIGER/Line® files should check for address range overlaps, gaps, odd/even reversals, and other situations that may be incorrect. While the Census Bureau continues to edit for, and correct these situations, it is possible that some still exist.

Corporate Corridors and Corporate Limit Offset Boundaries

A corporate corridor is a narrow, linear part of an incorporated place (or in a few instances, another legal entity). The corporate corridor includes the street and/or right-of-way, or a portion of the street and/or right-of-way within the incorporated place. It excludes from the incorporated place those structures such as houses, apartments, or businesses that front along the street or road.

A corporate limit offset boundary exists where the incorporated place lies on one side of the street and may include all or part of the street and/or right-of-way, but not the structures located on that side of the street. See the *Places* section in Chapter 4.

To facilitate the coding of addresses to the correct geographic entity, the Census TIGER® data base contains duplicate street name and address ranges on complete chains with a CFCC of F11 (nonvisible offset boundary) or F12 (nonvisible corporate corridor). The duplicate street names for the F11 and F12 features are on Record Type 5; the duplicate address ranges are on Record Type 6. Complete chains with CFCCs of F11 or F12 will not contain the duplicate names or address ranges in Record Type 1. Record Type 1 does not indicate that the street or right-of-way lies within a corporate corridor or offset boundary. Therefore, the address ranges lie outside the corporate corridor or offset boundary and are encoded on either side of these lines. Data users planning to geocode addresses in areas with these boundary types must identify the duplicate feature identifiers and ranges from Record Types 5 and 6 (the names and address ranges for CFCC F11 and F12 features), locate the street feature with those ranges, and remove the street feature's address ranges and geographic codes from the geocoding process.

Record Linkages

The TIGER/Line® files store address range information in two record types. Record Type 1 contains the basic complete chain attributes, including one basic address range. Record Type 6 stores the additional ranges when the complete chain has more than one range on one or both sides.

The TLID field links Record Types 1 and 6. Since a complete chain can have more than one set of address ranges, multiple Type 6 records can exist with the same TLID. The TIGER/Line® files distinguish these records with a record sequence number (RTSQ). All Type 6 records that have the same TLID appear sequentially in the file even though the records are not sorted by TLID. The TIGER/Line® files do not contain a field indicating whether a Type 6 record exists for a specific TLID; the user must scan any existing records in Record Type 6 for a TLID match.

Boundaries of Geographic Entities

The TIGER/Line® files store geographic codes as either a polygon or complete chain attribute. In the case of state and county level geography, the codes appear in both complete chain and polygon record types. Refer to Chapter 4 for descriptions of geographic areas, and to Chapter 6 for the data dictionary that describes the record type fields.

Record Linkages and Boundary Extraction

The codes assigned to the complete chain belong to the areas referenced by the left and the right sides of a complete chain. Only those features that have different geographic codes on the left and the right sides of a line become boundary features. Information from multiple TIGER/Line® data fields is required to uniquely identify the boundary of some geographic entities. For instance, both the census block and census tract/BNA codes are required to identify a block boundary. Block 101 in census tract 2101 could neighbor block 101 in census tract 2998. Be sure to use both the basic number and the suffix when extracting either census tract or block boundaries. Data users who have combined TIGER/Line® files should include the 1990 state/statistical equivalent and 1990 county/statistical equivalent codes to extract 1990 census tract/BNA boundaries.

The extraction of boundary features from polygon attribute codes requires making a link between the polygon and the complete chain data records, then identifying the features with different left- and right-side geographic codes. For a description of the record linkage process, see the *Polygon Features* section in this chapter.

Boundary rings consist of multiple complete chains that are sequentially linked together and connected to form a closed ring. The process of linking all of the boundary complete chains that outline the same geographic entity requires the extraction of all complete chains that have that entity's code on either the left or the right side (but not both). Linking the chains together will form a polygon; each polygon may represent one of the GT-polygons described in Record Types A, P, and S, or a collection of these GT-polygons.

Caution: Some types of geographic areas must end at a county/file boundary while others can continue into adjoining counties/files. For example, MCDs stop at a county boundary, whereas incorporated places can exist in several counties (See the *Record Linkages/Feature Chaining* section in this chapter*)*.

Single-Side Flags and County Boundaries

The 1995 TIGER/Line® files use current counties/statistical equivalents as the basis for the file coverage area, not the boundaries as they existed for the 1990 census. This means that a 1995 county or county-equivalent file may not cover the exact same area as it did in 1990. Any legal changes or boundary corrections that occurred since 1990 could have resulted in a piece of land moving from one county, or county equivalent, to another.

County boundary features are duplicated between adjoining pairs of counties so that each file is complete. However, the complete chains that constitute the boundary features contain only the geographic entity codes and address ranges relevant to each county-based TIGER/Line® file. The geographic entity codes are blanked out on the outside edge of the county, even though some of these fields must normally have a non-blank code. The TIGER/Line® file identifies these complete chains with a 1-character, single-side segment flag.

When combining several TIGER/Line® files to form a state or regional data set, the data user will need to eliminate duplicate boundary lines. Because each one of the duplicate boundary complete chains has either the left- or right-side geographic entity codes and address ranges, the elimination process will need to combine the codes and address ranges from both lines.

The same situation applies to the polygon identification codes. Record Type I contains CENIDs and POLYIDs for GT-polygons within the county. If the GT-polygon is in the adjacent county, the CENID and POLYID fields are blank.

Single-Side Flag Record Location

Record Type	Field Name	Description
1	SIDE1	Single-Side Complete Chain Code (flag)

Single-Side Flag Codes

1— The complete chain is a county boundary; either the left or the right side is blank

blank— The complete chain is not a county boundary; neither left nor right side is blank

Census Feature Class Codes (CFCCs)

A census feature class code (CFCC) is used to identify the most noticeable characteristic of a feature. The CFCC is applied only once to a chain or landmark with preference given to classifications that cover features that are visible to an observer and a part of the ground transportation network. Thus, a road that also is the boundary of a town would have a CFCC describing its road characteristics, not its boundary characteristics.

The CFCC, as used in the TIGER/Line® files, is a three-character code. The first character is a letter describing the feature class; the second character is a number describing the major category; and the third character is a number describing the minor category.

Feature Class A, Road

The definition of a divided highway has been the source of considerable discussion. Earlier specifications have defined a divided road as having "… opposing traffic lanes that are physically separated by a median strip no less than 70 feet wide in former GBF/DIME areas or no less than 200 feet wide in non-GBF/DIME areas." This definition caused confusion in the proper coding of interstates having narrow medians. To clarify the situation, the Census Bureau now uses the term *divided* to refer to a road with opposing traffic lanes separated by any size median, and *separated* to refer to lanes that are represented in the Census TIGER® data base as two distinct complete chains. Earlier operations may have depicted widely separated lanes as a single line in the data base or created separate lines when the median was small, depending on the available source used during the update.

The term, *rail line in center*, indicates that a rail line shares the road right-of-way. The rail line may follow the center of the road or be directly next to the road; representation is dependent upon the available source used during the update. The rail line can represent a railroad, a street carline, or other carline.

Primary Highway With Limited Access Interstate highways and some toll highways are in this category (A1) and are distinguished by the presence of interchanges. These highways are accessed by way of ramps and have multiple lanes of traffic. The opposing traffic lanes are divided by a median strip. The TIGER/Line® files may depict these opposing traffic lanes as two distinct lines in which case, the road is called *separated*.

CFCC	Description
A11	Primary road with limited access or interstate highway, unseparated
A12	Primary road with limited access or interstate highway, unseparated, in tunnel
A13	Primary road with limited access or interstate highway, unseparated, underpassing
A14	Primary road with limited access or interstate highway, unseparated, with rail line in center
A15	Primary road with limited access or interstate highway, separated
A16	Primary road with limited access or interstate highway, separated, in tunnel
A17	Primary road with limited access or interstate highway, separated, underpassing
A18	Primary road with limited access or interstate highway, separated, with rail line in center

Primary Road Without Limited Access This category (A2) includes nationally and regionally important highways that do not have limited access as required by category A1. It consists mainly of US highways, but may include some state highways and county highways that connect cities and larger towns. A road in this category must be hard-surface (concrete or asphalt). It has intersections with other roads, may be divided or undivided, and have multilane or single-lane characteristics.

CFCC	Description
A21	Primary road without limited access, US highways, unseparated
A22	Primary road without limited access, US highways, unseparated, in tunnel
A23	Primary road without limited access, US highways, unseparated, underpassing
A24	Primary road without limited access, US highways, unseparated, with rail line in center

Primary Road Without Limited Access *(cont.)*

CFCC	Description
A25	Primary road without limited access, US highways, separated
A26	Primary road without limited access, US highways, separated, in tunnel
A27	Primary road without limited access, US highways, separated, underpassing
A28	Primary road without limited access, US highways, separated, with rail line in center

Secondary and Connecting Road This category (A3) includes mostly state highways, but may include some county highways that connect smaller towns, subdivisions, and neighborhoods. The roads in this category are smaller than roads in Category A2, must be hard-surface (concrete or asphalt), and are usually undivided with single-lane characteristics. These roads usually have a local name along with a route number and intersect with many other roads and driveways.

CFCC	Description
A31	Secondary and connecting road, state highways, unseparated
A32	Secondary and connecting road, state highways, unseparated, in tunnel
A33	Secondary and connecting road, state highways, unseparated, underpassing
A34	Secondary and connecting road, state highways, unseparated, with rail line in center
A35	Secondary and connecting road, state highways, separated
A36	Secondary and connecting road, state highways, separated, in tunnel
A37	Secondary and connecting road, state and county highways, separated, underpassing
A38	Secondary and connecting road, state and county highway, separated, with rail line in center

Local, Neighborhood, and Rural Road A road in this category (A4) is used for local traffic and usually has a single lane of traffic in each direction. In an urban area, this is a neighborhood road and street that is not a thorough-fare belonging in categories A2 or A3. In a rural area, this is a short-distance road connecting the smallest towns; the road may or may not have a state or county route number. Scenic park roads, unimproved or unpaved roads, and industrial roads are included in this category. Most roads in the Nation are classified as A4 roads.

CFCC	Description
A41	Local, neighborhood, and rural road, city street, unseparated
A42	Local, neighborhood, and rural road, city street, unseparated, in tunnel

Local, Neighborhood, and Rural Road *(cont.)*

CFCC	Description
A43	Local, neighborhood, and rural road, city street, unseparated, underpassing
A44	Local, neighborhood, and rural road, city street, unseparated, with rail line in center
A45	Local, neighborhood, and rural road, city street, separated
A46	Local, neighborhood, and rural road, city street, separated, in tunnel
A47	Local, neighborhood, and rural road, city street, separated, underpassing
A48	Local, neighborhood, and rural road, city street, separated, with rail line in center

Vehicular Trail A road in this category(A5) is usable only by four-wheel drive vehicles, is usually a one-lane dirt trail, and is found almost exclusively in very rural areas. Sometimes the road is called a fire road or logging road and may include an abandoned railroad grade where the tracks have been removed. Minor, unpaved roads usable by ordinary cars and trucks belong in category A4, not A5.

CFCC	Description
A51	Vehicular trail, road passable only by 4WD vehicle, unseparated
A52	Vehicular trail, road passable only by 4WD vehicle, unseparated, in tunnel
A53	Vehicular trail, road passable only by 4WD vehicle, unseparated, underpassing

Road with Special Characteristics This category (A6) includes roads, portions of a road, intersections of a road, or the ends of a road that are parts of the vehicular highway system and have separately identifiable characteristics.

CFCC	Description
A61	Cul-de-sac, the closed end of a road that forms a loop or turn-around
A62	Traffic circle, the portion of a road or intersection of roads forming a roundabout
A63	Access ramp, the portion of a road that forms a cloverleaf or limited-access interchange
A64	Service drive, the road or portion of a road that provides access to businesses, facilities, and rest areas along a limited-access highway; this frontage road may intersect other roads and be named
A65	Ferry crossing, the representation of a route over water that connects roads on opposite shores; used by ships carrying automobiles or people

Road as Other Thoroughfare A road in this category (A7) is not part of the vehicular highway system. It is used by bicyclists or pedestrians, and is typically inaccessible to mainstream motor traffic except for private-owner and service vehicles. This category includes foot and hiking trails located on park and forest land, as well as stairs or walkways that follow a road right-of-way and have names similar to road names.

CFCC	Description
A71	Walkway or trail for pedestrians, usually unnamed
A72	Stairway, stepped road for pedestrians, usually unnamed
A73	Alley, road for service vehicles, usually unnamed, located at the rear of buildings and property
A74	Driveway or service road, usually privately owned and unnamed, used as access to residences, trailer parks, and apartment complexes, or as access to logging areas, oil rigs, ranches, farms, and park lands

Feature Class B, Railroad

Railroad With Major Category Unknown Source materials do not allow determination of the major railroad category. Major Category Unknown should not, under most circumstances, be used since the source materials usually provide enough information to determine the major category.

CFCC	Description
B01	Railroad track, not in tunnel or underpassing; major category used alone when the minor category could not be determined
B02	Railroad track, in tunnel
B03	Railroad track, underpassing

Railroad Main Line A railroad in this category is the primary track that provides service between destinations. A main line track often carries the name of the owning and operating railroad company.

CFCC	Description
B11	Railroad main track, not in tunnel or underpassing
B12	Railroad main track, in tunnel
B13	Railroad main track, underpassing

Railroad Spur A railroad in this category is the track that leaves the main track, ending in an industrial park, factory, or warehouse area, or forming a siding along the main track.

Railroad Spur *(cont.)*

CFCC	Description
B21	Railroad spur track, not in tunnel or underpassing
B22	Railroad spur track, in tunnel
B23	Railroad spur track, underpassing

Railroad Yard A railroad yard track has parallel tracks that form a working area for the railroad company. Train cars and engines are repaired, switched, and dispatched from a yard.

CFCC	Description
B31	Railroad yard track, not in tunnel or underpassing
B32	Railroad yard track, in tunnel
B33	Railroad yard track, underpassing

Railroad with Special Characteristics A railroad or portions of a railroad track that are parts of the railroad system and have separately identifiable characteristics.

CFCC	Description
B40	Railroad ferry crossing, the representation of a route over water used by ships carrying train cars to connecting railroads on opposite shores. These are primarily located on the Great Lakes.

Railroad as Other Thoroughfare A railroad that is not part of the railroad system. This category is for a specialized rail line or railway that is typically inaccessible to mainstream railroad traffic.

CFCC	Description
B50	Other rail line; major category used alone when the minor category could not be determined
B51	Carline, a track for street cars, trolleys, and other mass transit rail systems; used when the carline is not part of the road right-of-way
B52	Cog railroad, incline railway, or logging tram

Feature Class C, Miscellaneous Ground Transportation

Miscellaneous Ground Transportation With Category Unknown Source materials do not allow determination of the miscellaneous ground transportation category. Category Unknown should not, under most circumstances, be used since the source materials usually provide enough information to determine the major category.

Miscellaneous Ground Transportation With Category Unknown *(cont.)*

CFCC	Description
C00	Miscellaneous ground transportation, not road or railroad; major and minor categories unknown

Pipeline Enclosed pipe, carrying fluid or slurry, situated above ground, or in special conditions, below ground when marked by a cleared right-of-way and signage.

CFCC	Description
C10	Pipeline; major category used alone

Power Transmission Line High voltage electrical line, on towers, situated on cleared right-of-way.

CFCC	Description
C20	Power transmission line; major category used alone

Miscellaneous Ground Transportation With Special Characteristics
A portion of a ground transportation system that has separately identifiable characteristics. This category is for specialized transportation, usually confined to a local area, that is separate from other ground transportation.

CFCC	Description
C30	Other ground transportation that is not a pipeline or a power transmission line; major category used alone when minor category could not be determined
C31	Aerial tramway, monorail, or ski lift

Feature Class D, Landmark

Landmark is the general name given to a cartographic (or locational) landmark, a land-use area, and a key geographic location. A cartographic landmark is identified for use by an enumerator while working in the field. A land-use area is identified in order to minimize enumeration efforts in uninhabited areas or areas where human access is restricted. A key geographic location is identified in order to more accurately geocode and enumerate a place of work or residence.

Landmark With Category Unknown Source materials do not allow determination of the landmark category. Category Unknown should not,

under most circumstances, be used since the source materials usually provide enough information to determine the major category.

CFCC	Description
D00	Landmark; major and minor categories unknown

Military Installation Base, yard, or depot used by any of the armed forces or the Coast Guard

CFCC	Description
D10	Military installation or reservation; major category used alone

Multihousehold or Transient Quarters

CFCC	Description
D20	Multihousehold or transient quarters; major category used alone when the minor category could not be determined
D21	Apartment building or complex
D22	Rooming or boarding house
D23	Trailer court or mobile home park
D24	Marina
D25	Crew-of-vessel area
D26	Housing facility for workers
D27	Hotel, motel, resort, spa, YMCA, or YWCA
D28	Campground
D29	Shelter or mission

Custodial Facility This category includes institutions that have personnel such as guards, nurses, and caretakers to preserve the welfare of those individuals resident in the facility.

CFCC	Description
D30	Custodial facility; major category used alone when the minor category could not be determined
D31	Hospital
D32	Halfway house
D33	Nursing home, retirement home, or home for the aged
D34	County home or poor farm
D35	Orphanage
D36	Jail or detention center
D37	Federal penitentiary, state prison, or prison farm

Educational or Religious Institution

CFCC	Description
D40	Educational or religious institution; major category used alone when the minor category could not be determined
D41	Sorority or fraternity
D42	Convent or monastery
D43	Educational institution, including academy, school, college, and university
D44	Religious institution, including church, synagogue, seminary, temple, and mosque

Transportation Terminal The facility where transportation equipment is stored, the destination for travel on the transportation system, or the intermodal connection facility between transportation systems.

CFCC	Description
D50	Transportation terminal; major category used alone when the minor category could not be determined
D51	Airport or airfield
D52	Train station
D53	Bus terminal
D54	Marine terminal
D55	Seaplane anchorage

Employment Center This category includes locations with high-density employment.

CFCC	Description
D60	Employment center; major category used alone when the minor category could not be determined
D61	Shopping center or major retail center
D62	Industrial building or industrial park
D63	Office building or office park
D64	Amusement center
D65	Government center
D66	Other employment center

Tower

CFCC	Description
D70	Tower; major category used alone when minor category could not be determined
D71	Lookout tower

Open Space This category contains areas of open space with no inhabitants, or with inhabitants restricted to known sites within the area.

Open Space *(cont.)*

CFCC	Description
D80	Open space; major category used alone when the minor category could not be determined
D81	Golf course
D82	Cemetery
D83	National park
D84	National forest or other Federal land
D85	State or local park or forest

Special Purpose Landmark This category includes landmarks not otherwise classified.

CFCC	Description
D90	Special purpose landmark; major category used alone when the minor category could not be determined
D91	Post office box-only ZIP Code$^®$ location (for these ZIP Codes$^®$, the USPS provides only post office box service, not street delivery)
D92	Urbanizacion, an identifiable community development in Puerto Rico

Feature Class E, Physical Feature

Physical Feature With Category Unknown Source materials do not allow determination of the physical feature category. Major Category Unknown should not, under most circumstances, be used since the source materials usually provide enough information to determine the major category.

CFCC	Description
E00	Physical feature, tangible but not transportation or hydrographic; major and minor categories unknown

Fence This category describes a fence that separates property. For example, a fence around a military reservation or prison separates the reservation from civilian land. Thus, a fence line is a property line marked by a fence.

CFCC	Description
E10	Fence line locating a visible and permanent fence between separately identified property

Topographic Feature This category refers to topographical features that may be used as boundaries or as a reference for an area. The Census TIGER$^®$ data base contains topographic features used to define the

limits of statistical entities in locations where no other visible feature can be identified.

CFCC	Description
E20	Topographic feature; major category used when the minor category could not be determined
E21	Ridge line, the line of highest elevation of a linear mountain
E22	Mountain peak, the point of highest elevation of a mountain
E23	Island, identified by name

Feature Class F, Nonvisible Features

Nonvisible features are used to delimit tabulation entities, property areas, and legal and administrative entities. The Census Bureau separately identifies nonvisible boundaries only when they do not follow a visible feature such as a road, stream, or ridge line.

Nonvisible Boundary With Classification Unknown or Not Elsewhere Classified

CFCC	Description
F00	Nonvisible boundary; major and minor categories unknown

Nonvisible Legal or Administrative Boundary

CFCC	Description
F10	Nonvisible jurisdictional boundary of a legal or administrative entity; major category used when the minor category could not be determined
F11	Offset boundary of a legal or administrative entity
F12	Corridor boundary of a legal or administrative entity
F13	Interpolated boundary of a legal or administrative entity used for closure through hydrological areas
F14	Superseded legal or administrative boundary
F15	Superseded legal or administrative boundary, corrected through post census process

Nonvisible Features for Data Base Topology This category contains various types of nonvisible lines used to maintain the topology in the Census TIGER® data base.

CFCC	Description
F20	Nonvisible feature for data base topology; major category used when the minor category could not be determined
F21	Automated feature extension to lengthen existing physical feature
F22	Irregular feature extension, determined manually, to lengthen existing physical feature

Nonvisible Features for Data Base Topology *(cont.)*

CFCC	Description
F23	Closure extension to complete data base topological closure between extremely close features (used to close small gaps between complete chains and create polygons to improve block labeling on cartographic products)
F24	Nonvisible separation line used with offset and corridor boundaries
F25	Nonvisible centerline of area enclosed by corridor boundary

Point-to-Point Line

CFCC	Description
F30	Point-to-point line, follows a line of sight and should not cross any visible feature; for example, from the end of a road to a mountain peak.

Property Line

CFCC	Description
F40	Property line, nonvisible boundary of either public or private lands, e.g., a park boundary

ZIP Code® Boundary

CFCC	Description
F50	ZIP Code® boundary, reserved for future use in delineating ZIP Code® Tabulation Areas

Map Edge

CFCC	Description
F60	Map edge, now removed, used during data base creation

Nonvisible Statistical Boundary

CFCC	Description
F70	Statistical boundary; major category used when the minor category could not be determined
F71	1980 statistical boundary
F72	1990 statistical boundary; used to hold collection and tabulation census block boundaries not represented by existing physical features
F73	Internal Census Bureau use
F74	1990 statistical boundary; used to hold a tabulation census block boundary not represented by an existing physical feature

Nonvisible Other Tabulation Boundary

CFCC	Description
F80	Nonvisible other tabulation boundary; major category used when the minor category could not be determined
F81	Internal Census Bureau use
F82	Internal Census Bureau use

Feature Class H, Hydrography

Basic Hydrography This category includes shorelines of all water regardless of the classification of the water itself.

CFCC	Description
H00	Water feature, classification unknown or not elsewhere classified
H01	Shoreline of perennial water feature
H02	Shoreline of intermittent water feature

Naturally Flowing Water Features

CFCC	Description
H10	Stream; major category used when the minor category could not be determined
H11	Perennial stream or river
H12	Intermittent stream, river, or wash
H13	Braided stream or river

Man-Made Channel to Transport Water These features are used for purposes such as transportation, irrigation, or navigation.

CFCC	Description
H20	Canal, ditch, or aqueduct; major category used when the minor category could not be determined
H21	Perennial canal, ditch, or aqueduct
H22	Intermittent canal, ditch, or aqueduct

Inland Body of Water

CFCC	Description
H30	Lake or pond; major category used when the minor category could not be determined
H31	Perennial lake or pond
H32	Intermittent lake or pond

Man-Made Body of Water

CFCC	Description
H40	Reservoir; major category used when the minor category could not be determined
H41	Perennial reservoir
H42	Intermittent reservoir

Seaward Body of Water

CFCC	Description
H50	Bay, estuary, gulf, sound, sea, or ocean; major category used when the minor category could not be determined
H51	Bay, estuary, gulf, or sound
H53	Sea or ocean

Body of Water in a Man-Made Excavation

CFCC	Description
H60	Gravel pit or quarry filled with water

Nonvisible Definition Between Water Bodies

The Census Bureau digitizes nonvisible definition boundaries to separate named water areas; for instance, an artificial boundary is drawn to separate a named river from the connecting bay.

CFCC	Description
H70	Nonvisible water area definition boundary; used to separate named water areas and as the major category when the minor category could not be determined
H71	USGS closure line; used as a maritime shoreline
H72	Census water center line; computed to use as a median positional boundary
H73	Census water boundary, international in waterways or at 12-mile limit; used as an area measurement line
H74	Census water boundary separating inland from coastal or Great Lakes; used as an area measurement line
H75	Census water boundary separating coastal from territorial at 3-mile limit; used as an area measurement line

Special Water Feature Includes area covered by glaciers or snow fields.

CFCC	Description
H80	Special water feature; major category used when the minor category could not be determined
H81	Glacier

Feature Class X, Not Yet Classified

Classification Unknown or Not Elsewhere Classified

CFCC	Description
X00	Feature not yet classified

All complete chains, landmarks, and key geographic locations have a code representing their census feature class. Only those GT-polygons associated with an area landmark have a CFCC. Most CFCCs in the feature classification scheme apply only to complete chains. In a few instances, the same feature code may apply to complete chains as well as to point and area landmarks.

Only those features required for census operational purposes are classified and inserted into the Census TIGER® data base. Therefore, not all features in a county will appear in the TIGER/Line® files. Since features are classified with only a single code, a road that also is a boundary will have only the CFCC of a road even though a CFCC for a boundary exists in the classification scheme.

CFCC Record Location

Record Type	Field Name	Description
1	CFCC	Code assigned to the complete chain
7	CFCC	Code assigned to a point or area landmark
9	CFCC	Code assigned to a key geographic location

Points Describing the Complete Chain

The TIGER/Line® files describe the spatial/geometric position and shape of a complete chain using shape points and nodes; see the section entitled *Topology* in Chapter 1. Latitude and longitude coordinate fields identify the shape points and nodes. The Census TIGER®data base does not support node identification numbers.

Nodes

Nodes are topological objects that mark the end location of each complete chain. Every chain has two nodes, a *start node* and an *end node* (using the

Spatial Data Transfer Standard, or SDTS, terminology). Earlier releases of the TIGER/Line® files refer to these nodes as the *from node* and the *to node*. The order of the nodes establishes the left and the right sides of the line and sets the sequencing order for the shape points. The node coordinates are stored in Record Type 1.

Shape Points

The Census Bureau uses the term *shape points* to describe the non-topological points that describe the position and shape of a chain. Shape points exist only where required; straight-line complete chains require no shape points. Shape points are associated only with one complete chain and are listed in order from *start node* to *end node*. The TIGER/Line® files store shape points in Record Type 2 and link them to the nodes in Record Type 1 using the TLID. The shape points for a chain can fill several Type 2 records.

Coordinates for Nodes and Shape Points

Coordinates are expressed in Federal Information Processing Standard (FIPS) notation, where a positive latitude represents the Northern Hemisphere and a negative longitude represents the Western Hemisphere. All coordinates are expressed as a signed integer with six decimal places of precision implied (see the section, *Positional Accuracy*, in Chapter 5).

	Actual	*TIGER/Line® File*
Latitude 15 Deg. S to 72 Deg. N	-15000000 to +72000000
Longitude 64 Deg. W to 131 Deg. E	-64000000 to -180000000
	+179999999 to +131000000

For the 48 contiguous states, the District of Columbia, Alaska, Puerto Rico, and the Virgin Islands, the coordinates in the 1995 TIGER/Line® files were converted to the North American Datum of 1983 (NAD83). In all previous versions, the coordinate datum for the above areas was NAD27. For Hawaii and the Pacific Island Territories, regional datums were used in the 1995 TIGER/Line® files and in all previous versions of the TIGER/Line® files.

Coordinate Values

All nodes have non-zero coordinates within the range specified in the *Coordinates for Nodes and Shape Points* section on the previous page. Shape point coordinates are expressed in the same manner. However, unused Record Type 2 fields are zero-filled and begin with a "+" sign.

Record Locations for Nodes and Shape Point Coordinates

Record Type	Field Name	Description
1	FRLONG	Start Longitude
1	FRLAT	Start Latitude
1	TOLONG	End Longitude
1	TOLAT	End Latitude
2	LONG1	Point 1, Longitude
2	LAT1	Point 1, Latitude
2	LONG2	Point 2, Longitude
2	LAT2	Point 2, Latitude
2	LONG3	Point 3, Longitude
2	LAT3	Point 3, Latitude
⋮	⋮	⋮
2	LONG10	Point 10, Longitude
2	LAT10	Point 10, Latitude

Record Linkages/Feature Chaining

Plotting a complete chain requires using the nodes from Record Type 1 and all of the shape point records in Record Type 2 with the same TLID, if any. Plot the start node first, then search Record Type 2 for any matching records. If there is a match, the record will contain from 1 to 10 shape points. If all 10-point fields are filled with non-zero values, there may be an additional matching Type 2 record. Type 2 records are not sorted by TLID, but all records with the same TLID should appear together in sequence by the record sequence number (RTSQ). Plot the shape points from all Type 2 records and end the complete chain by plotting the end node.

Street features may consist of multiple complete chains that are sequentially linked together. Linking all of the features with the same name requires the extraction of all Type 1 and Type 2 records with the same feature identifiers in Record Types 1 and 5.

Boundary generation requires the extraction of all features that have different left and right geographic codes. The placement of the complete chains into a boundary-ring sequence requires a procedure to match the end of one complete chain to the beginning or end of the next complete chain. The complete chains will probably not have the same *to-from* or *start-end* orientation down the length of the street or boundary. Therefore, the procedure must reverse the order of the nodes and shape points that form some complete chains to achieve a correct and consistent sequence of nodes and shape points. Since the nodes that identify the ends of the complete chains do not have an identification number, the procedure must match the nodes based on the latitude and longitude coordinates. This might facilitate the match by combining the coordinates into a single peano key code composed of alternating latitude and longitude digits. Sorting nodes using the peano key will cluster nodes that are spatially close together.

Polygon Features

The TIGER/Line® files contain identification and geographic codes for each GT-polygon in the Census TIGER® data base. These GT-polygons are the smallest areas identified in the TIGER/Line® files. Geographic entities and area landmarks have specific identification codes and form more complex polygons. The TIGER/Line® files link these features to GT-polygons, but do not directly identify the more complex polygons.

GT-polygons are building blocks that form features. They are not features and do not have their own feature name or CFCC. However, GT-polygons may be a part of many area landmark features that have their own feature name and CFCC.

GT-polygons have unique GT-polygon identification codes (CENID and POLYID), a set of geographic entity codes, and an internal point location. Refer to Chapter 2 for more information on GT-polygon identification codes and Chapter 4 for a description of the geographic entities in the TIGER/Line® files.

Information and record linkage keys for GT-polygons are distributed over several record types:

- Record Type P — provides the GT-polygon internal point location
- Record Type A — provides the 1990 census geographic entity codes and areas
- Record Type 8 — links GT-polygons to area landmarks
- Record Type 9 — links GT-polygons to key geographic location features
- Record Type I — links GT-polygons to complete chains
- Record Type S — provides current geographic entity codes and areas

Updates to the Census TIGER® data base include new street and boundary complete chains that create new GT-polygons. Thus, each version of the TIGER/Line® files will have a single, unique set of GT-polygons, each with a corresponding Record Type A, S, and P. The CENID and POLYID identification codes link records together, but are not permanent GT-polygon identification codes.

Geographic Entity Codes

Geographic entity codes can be attributes of a set of polygons, a complete chain, or both. Refer to Chapter 6 for the data dictionary that describes the record type fields and to Chapter 4 for descriptions of geographic areas.

Internal Points

The internal point is a point location within each GT-polygon that is unique to that GT-polygon. The TIGER/Line® files exclude the internal points from the node-complete chain-polygon topology; do not confuse the internal point with a centroid. In a polygon with an irregular shape, such as a doughnut or crescent shape, the true centroid could fall outside the polygon. Unlike true centroids, the internal points always fall within the GT-polygon or on the GT-polygon boundary.

Some of the GT-polygons (approximately 400 nationwide) are so small that the internal point may be identical to a point on one of the lines bounding the GT-polygon, or identical to one of the nodes. Depending upon the precision of a particular software or hardware system, the data user may find the internal point outside the correct GT-polygon, or find that a GT-polygon may contain two internal points.

Changes to the shape and location of complete chains forming polygon boundaries will change the polygon internal point coordinates even though the topology of the polygon remains the same. Such changes complicate the matching, using internal point coordinates, of polygons from different versions of the TIGER/Line® files.

All internal points have non-zero coordinates. Coordinates are expressed in standard FIPS PUB 70 notation. See the *Coordinates for Nodes and Shape Points* section in this chapter.

GT-Polygon Internal Point Coordinates Record Locations

Record Type	Field Name	Description
P	POLYLONG	Internal point longitude
P	POLYLAT	Internal point latitude

Record Linkages

The topological network of complete chains divides the surface area of geographic entities into GT-polygons. There is a one-to-one relationship between the GT-polygons constructed from Record Types 1 and 2 and those appearing in Record Type P. In constructing the GT-polygons from Record Types 1 and 2, users are cautioned to be sure their software has the necessary coordinate precision and does not snap together complete chains that are merely close.

Record Type I provides a direct link from each complete chain in the TIGER/Line® file to its adjoining GT-polygons. It contains both the TLID and the polygon identification codes for each side of the GT-polygon. Record Type I facilitates the transfer of polygon geographic codes to the complete chain, but also provides the link back from polygon to complete chain. In this case, finding all complete chains associated with a GT-polygon is more difficult. The procedure involves searching every Type I record to locate all instances where a CENID and POLYID appear on either the left or the right side of a complete chain.

Area landmarks also must link to the GT-polygons in order to establish their geographic location. Record Type 8 provides the link from GT-polygon to area landmark. See the *Area Landmark Locations* section in this chapter.

Landmark Features

The Census Bureau includes landmarks in the Census TIGER® data base for locating special features and to help enumerators during field operations. Some of the more common landmark types include airports, cemeteries, parks, and educational facilities.

The Census Bureau added landmark features on an as-needed-basis and made no attempt to ensure that all instances of a particular feature were included. The absence of a landmark does not mean that the living quarters, e.g., hospitals and group quarters associated with the landmark were excluded from the 1990 enumeration. The address list used for the census was maintained apart from the landmark data. Landmarks with a ZIP Code® and an address are called key geographic locations (KGLs).

A landmark can be either a point, line, or area type. In some cases, the Census TIGER® data base permits a choice of types. For instance, an airport or airfield might appear as a point, line, or area; the approach depends on the size of the feature and the depiction of the feature in the source document.

Line features such as airfields could appear as one or more complete chains; they are not identified in the landmark record types. See the *Point, Line, and Area Landmark CFCCs* section in this chapter to identify the possible codes that could appear as complete chains.

In addition to landmark data, the TIGER/Line® files contain the CFCCs and names for bodies of water including ponds, lakes, oceans, and the area covered by large streams represented as double-line drainage. These water areas have 1990 census block numbers ending in 99. See Chapter 4 for a complete description of census blocks covering land and water.

Landmark and water features can overlap. The most common situation is a park or other special land-use feature that includes a lake or pond. In this case, the GT-polygon covered by the lake or pond belongs to a water landmark feature and a park landmark feature. Other kinds of landmarks can overlap as well. Area landmarks can contain point landmarks; these are not linked in the TIGER/Line® files.

Record Type 7 contains point and area landmarks. Most water areas are identified as an area landmark whether named or not. The other landmarks may be identified only by a census feature class code and may not have a name. During the extraction of this data, the Census Bureau assigned a temporary landmark identification number (LAND) to each landmark record. Record Type 8 uses the LAND to link the area landmark records in Record Type 7 to the GT-polygons. Record Type 7 and Record Type 8 exist only when the county file contains landmark features or water features. Record Type 9 contains the KGLs in the Census TIGER® data base. The KGLs are linked by the CENID and POLYID to the GT-polygons.

Point, Line, and Area Landmark CFCCs

All landmarks, including KGLs, have a CFCC. In the Census TIGER® data base the CFCCs of the complete chains forming the polygon boundary are independent of the CFCCs assigned to the area landmark or the water feature filling the polygon.

Landmark CFCC Record Locations

Record Type	Field Name	Description
7	CFCC	Code assigned to point and area landmarks
9	CFCC	Code assigned to key geographic location

Landmark CFCC Codes

CFCC	Description	Point	Line	Area
D00	Landmark feature, classification unknown, or not elsewhere classified	P	L	A
D10	Military installation	P	–	A
D20	Multihousehold and transient quarters	P	–	A
D21	Apartment building or complex	P	–	A
D22	Rooming or boarding house	P	–	–
D23	Trailer court or mobile home park	P	–	A
D24	Marina	P	–	A
D25	Crew-of-vessel area		–	A
D26	Housing facility for workers	P	–	A
D27	Hotel, motel, resort, spa, YMCA, or YWCA	P	–	A

CFCC	Description	Point	Line	Area
D28	Campground	P	–	A
D29	Shelter or mission	P	–	A
D30	Custodial facility	P	–	A
D31	Hospital	P	–	A
D32	Halfway house	P		
D33	Nursing home, retirement home, or home for the aged	P	–	A
D34	County home or poor farm	P	–	A
D35	Orphanage	P	–	A
D36	Jail or detention center	P	–	A
D37	Federal penitentiary, state prison, or prison farm	P	–	A
D40	Educational or religious institution	P	–	A
D41	Sorority or fraternity	P	–	–
D42	Convent or monastery	P	–	A
D43	Educational institution	P	–	A
D44	Religious institution	P	–	A
D50	Transportation terminal	P	L	A
D51	Airport or airfield	P	L	A
D52	Train station	P	–	A
D53	Bus terminal	P	–	A
D54	Marine terminal	P	–	A
D55	Seaplane anchorage	P	–	A
D60	Employment center	P	–	A
D61	Shopping center or major retail center	P	–	A
D62	Industrial building or industrial park	P	–	A
D63	Office building or office park	P	–	A
D64	Amusement center	P	–	A
D65	Government center	P	–	A
D66	Other employment center	P	–	A
D70	Tower	P	–	–
D71	Lookout tower	P	–	–
D80	Open space	P	–	A
D81	Golf course	P	–	A
D82	Cemetery	P	–	A
D83	National park	P	–	A
D84	National forest or other federal land	P	–	A

CFCC	Description	Point	Line	Area
D85	State or local park or forest	P	–	A
D90	Special purpose landmark	P	–	A
D91	Post office box ZIP Code®	P	–	A
D92	*Urbanizacion,* an identifiable community development in Puerto Rico	P	–	A
H00	Water feature, classification unknown, or not elsewhere classified	P	L	A
H10	Stream	–	L	A
H11	Perennial stream or river	–	L	A
H12	Intermittent stream, river, or wash	–	L	A
H13	Braided stream or river	–	L	A
H20	Canal, ditch, or aqueduct	–	L	A
H21	Perennial canal, ditch, or aqueduct	–	L	A
H22	Intermittent canal, ditch, or aqueduct	–	L	A
H30	Lake or pond	–	–	A
H31	Perennial lake or pond	–	–	A
H32	Intermittent lake or pond	–	–	A
H40	Reservoir	–	–	A
H41	Perennial reservoir	–	–	A
H42	Intermittent reservoir	–	–	A
H50	Bay, estuary gulf, sound, sea, or ocean	–	–	A
H51	Bay, estuary gulf, or sound	–	–	A
H53	Sea, or ocean	–	–	A
H60	Gravel pit or quarry filled with water	–	–	A
H80	Special water feature	–	–	A
H81	Glacier	–	–	A

Landmark Feature and KGL Names

The TIGER/Line® files contain an optional 30-character text string used to identify the proper name of the landmark feature or water area. The text string includes upper- and lower-case characters. The feature name may carry an imbedded feature type (e.g., River, Military Reservation,

Garden, Park, and Lake). The Census Bureau has not standardized or edited the feature types or names for landmarks in the Census TIGER® data base in all areas.

The Census Bureau does not guarantee that the landmarks or water areas are consistently identified in the TIGER/Line® files. Area landmarks added to the Census TIGER® data base in different update actions with the same name and CFCC will produce separate landmark records in the TIGER/Line® files. The landmark records may contain variant spellings of the feature name or different CFCCs even though they refer to the same feature. These differences could result in the fragmentation of a large landmark. For instance, a water body could have the name Lake Redmond with a CFCC of H31, while another part could have the same name, but a CFCC of H30, and still a third part could have the name York County Reservoir. Because area landmarks can overlap, it is possible, although not likely, for one polygon to belong to several landmarks.

Area landmarks and water area labels can have alternate names. Each feature name will appear as a separate Type 7 record, but each record will have the same LAND. Type 7 Records with the same LAND will have the same landmark or water area label. Each unique combination of primary and alternate names becomes a separate landmark record even though the primary name and the CFCCs match the adjoining landmark features.

The TIGER/Line® files do not show all water bodies as landmark records. Using Record Type 7 (area landmarks) and Record Type 8 (polygons linked to area landmarks) will not necessarily provide all water areas. Record Type S contains a water flag (WATER) to identify all polygons associated with water bodies.

Key geographic location names uniquely identify the landmark separately from its street address; for example, Springfield Towers instead of 1605 Main St.

Landmark Feature Record Locations

Record Type	Field Name	Description
7	LANAME	Landmark name
9	KGLNAME	Key geographic location name

Landmark Feature Name Codes The LANAME and KGLNAME field may include any ASCII text string. The fields can be blank where the feature is unnamed.

Point Landmark Locations

The TIGER/Line® files identify the location of point landmarks with a single coordinate point. The presence of coordinate data in Record Type 7 distinguishes point landmarks from area landmarks that have blank coordinate fields.

Coordinates Coordinates are expressed in standard FIPS PUB 70 notation. For additional information, see the *Coordinates for Nodes and Shape Points* section in this chapter.

Point Landmark Coordinate Record Locations

Record Type	Field Name	Description
7	LALONG	Longitude
7	LALAT	Latitude

Coordinate Values All point landmarks have non-zero coordinates within the range specified above. The coordinate fields for area landmarks are blank-filled.

Area Landmark Locations

To find the location of each area landmark, link the basic landmark description in Record Type 7 to all of the elementary polygons that belong to the landmark. Record Type 8 serves as a bridge between these two record types. The TIGER/Line® files provide a Type 8 record for each polygon linked to a specific landmark. Polygons belonging to multiple landmarks appear once for each landmark. The TIGER/Line®

files use the LAND and the polygon identification codes (CENID and POLYID) to actually make the link. See Chapter 2 for a description of the LAND, CENID, and POLYID codes and fields.

Locate the polygons for an area landmark by searching Record Type 8 for all of the CENIDs and POLYIDs with the specified LAND. Record Type 8 is in LAND sort sequence. Once the polygons are linked to the area landmark, use Record Type I to locate the complete chains that form the landmark's polygon boundaries. Record Type I contains a record for all complete chains and identifies the polygons located on either side of the complete chains.

The search procedure must look for all instances of Record Type I and evaluate the left- and right-side polygon identifiers for a possible match. Data users may need to eliminate complete chains that are internal to the polygon and landmark, depending on the application.

KGLs

To find the location of KGLs, link the description in Record Type 9 to the elementary polygon in which the KGL is found. Use the polygon identification codes (CENID and POLYID) to make the link. If the address of the KGL is a street address, use the FEAT field (alternate feature ID code) to link to the feature identifier in Record Type 5.